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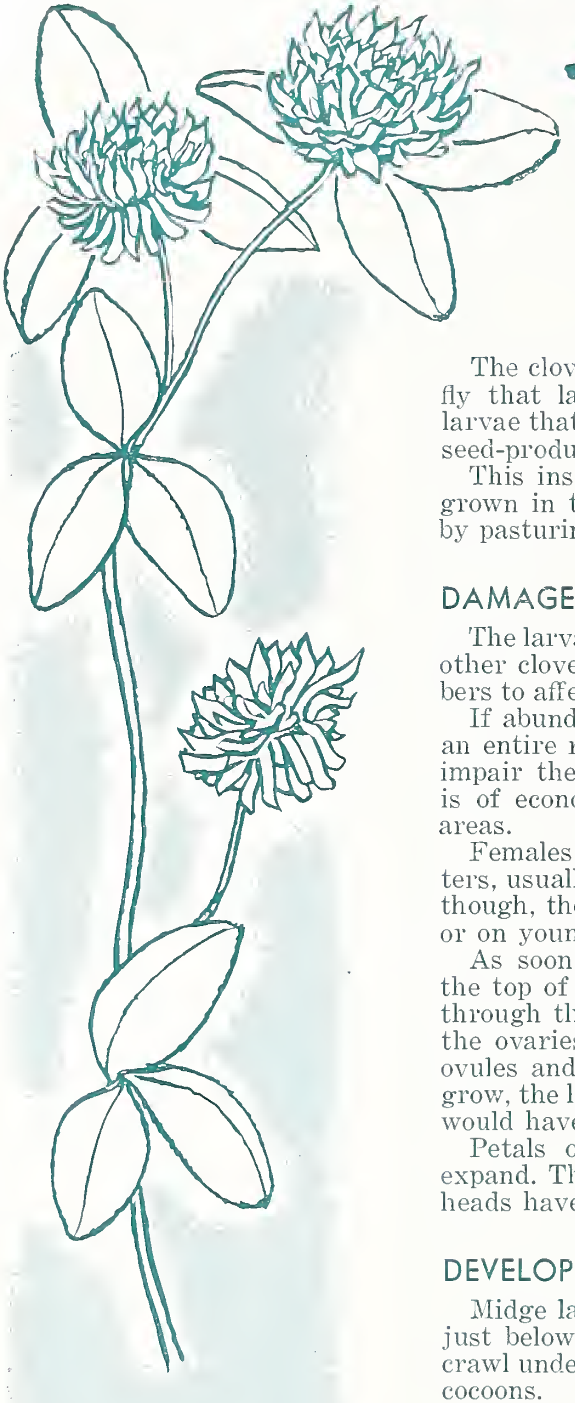
The Clover Seed Midge

HOW TO CONTROL IT

LEAFLET NO. 371
U. S. DEPARTMENT OF AGRICULTURE



The Clover Seed Mi

HOW TO CONTROL IT

The clover seed midge [1] is a small, mosquitolike fly that lays eggs in young clover heads. Tiny larvae that hatch from the eggs suck the sap from seed-producing parts of the flower.

This insect probably occurs wherever clover is grown in the United States. It can be controlled by pasturing, cutting, clipping, and soiling.

DAMAGE

The larvae feed chiefly on red clover. They infest other clovers rarely, and never in sufficient numbers to affect seed production.

If abundant, the larvae may damage or destroy an entire red clover seed crop. Since they do not impair the forage value of clover, their damage is of economic significance only in seed-growing areas.

Females lay their eggs either singly or in clusters, usually on the calyx or its hairs. Frequently, though, they lay them just inside the leaf sheath, or on young leaves surrounding the head.

As soon as they hatch, the larvae wriggle to the top of the flowers and force their way inside through the unopened petals. They work down to the ovaries and suck the sap. This destroys the ovules and prevents seed from forming. As they grow, the larvae gradually take over the space that would have been occupied by the clover seed.

Petals of a flower infested by larvae rarely expand. They blossom imperfectly and the clover heads have an irregular or mangy appearance.

DEVELOPMENT

Midge larvae spend the winter in cocoons on or just below the soil surface. Sometimes they just crawl under debris on the surface and do not make cocoons.

In the Northwest, where development of the insect was studied, thr each season—one in t mer, and one in late areas, the seasonal de

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[1] *Dasyneura leguminicola.*

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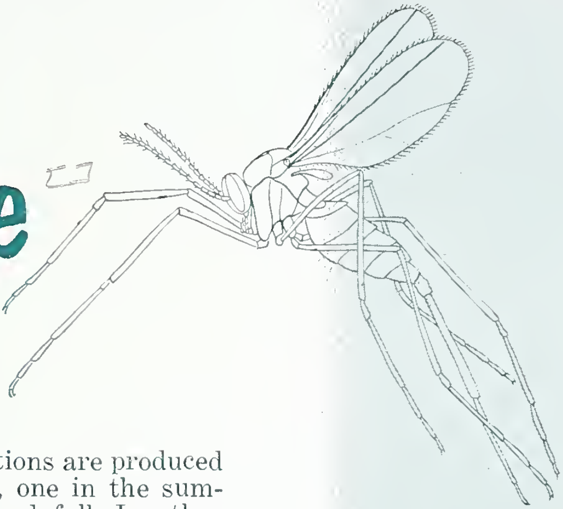

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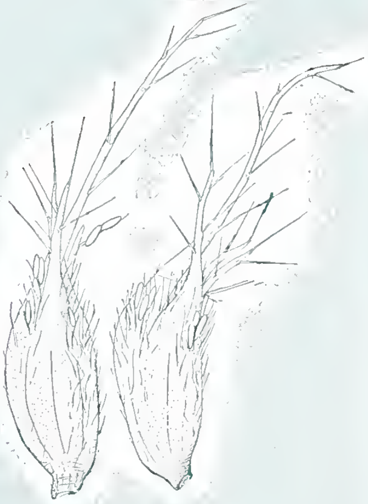

Eggs of the clover seed midge fastened to hairs of calyx in immature red-clover flowers.

Clover heads infested by larvae of the clover seed midge.

When young clover heads are at this stage, midge lays its eggs.

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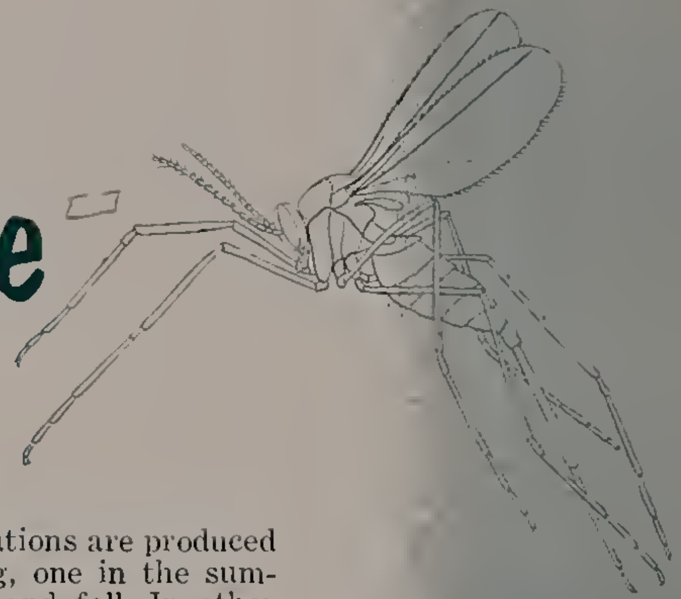

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DEVELOPMENT

Midge larvae spend the winter in cocoons on or just below the soil surface. Sometimes they just crawl under debris on the surface and do not make cocoons.

In the Northwest, where development of the insect was studied, three generations are produced each season—one in the spring, one in the summer, and one in late summer and fall. In other areas, the seasonal development may differ.

Spring

In April and May the larvae change into pupae within the cocoons, and the adults emerge 2 to 3 weeks later. In an early season, some adults emerge from the cocoons in mid-April, but if the season is late, few emerge until early May.

Adults usually are most abundant about the third week in May. After that they gradually decrease and become scarce by mid-June. During the emergence period, increased numbers of adults appear when fair weather follows several days of cool spring rains.

As soon as they emerge, females mate and fly to small, green clover heads to lay their eggs. They prefer young clover heads that are just pushing through the leaf sheath, but they frequently select older ones that are still green.

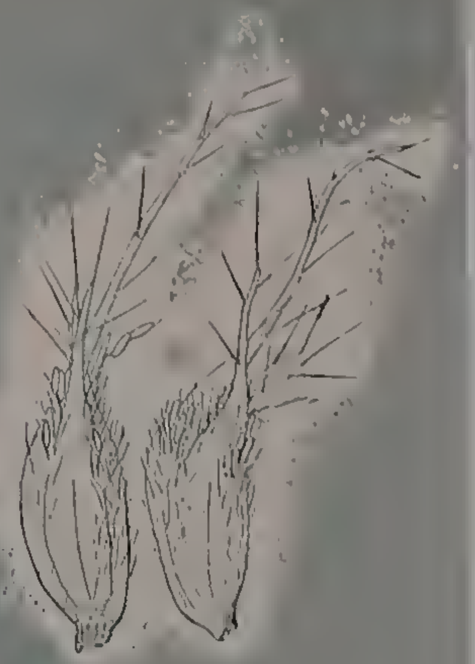
The eggs hatch in 3 to 5 days.

Spring-generation larvae complete their growth in about a month. Few mature before late May. If the season is late, full-grown larvae may not be in the field before the second or third week of June.

Summer

When rain moistens clover heads—perhaps several weeks after larvae mature—larvae drop out, work their way into the ground, and spin cocoons. They pupate at once. The pupal period usually lasts 2 to 3 weeks, but a dry spell may lengthen it. A drought kills many larvae and pupae.

The first adults of the summer generation appear in the fields during the first 2 weeks of July. If there has been a fair amount of rainfall, adults emerge in constantly increasing numbers until the last week of July. Then they decrease in abundance, and by mid-August most of them are dead.



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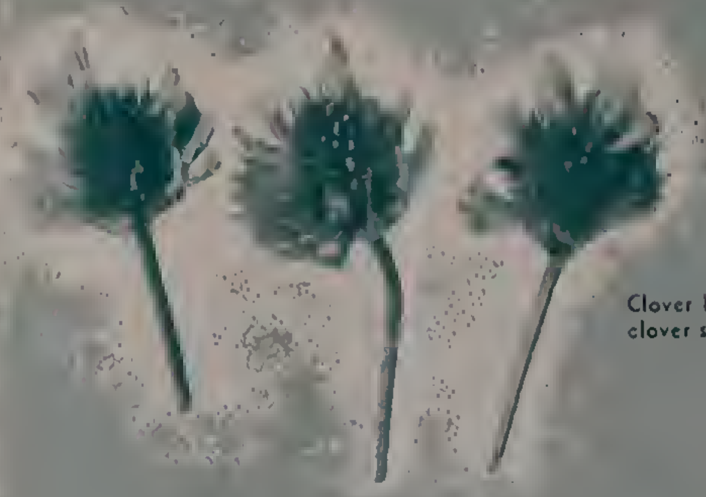
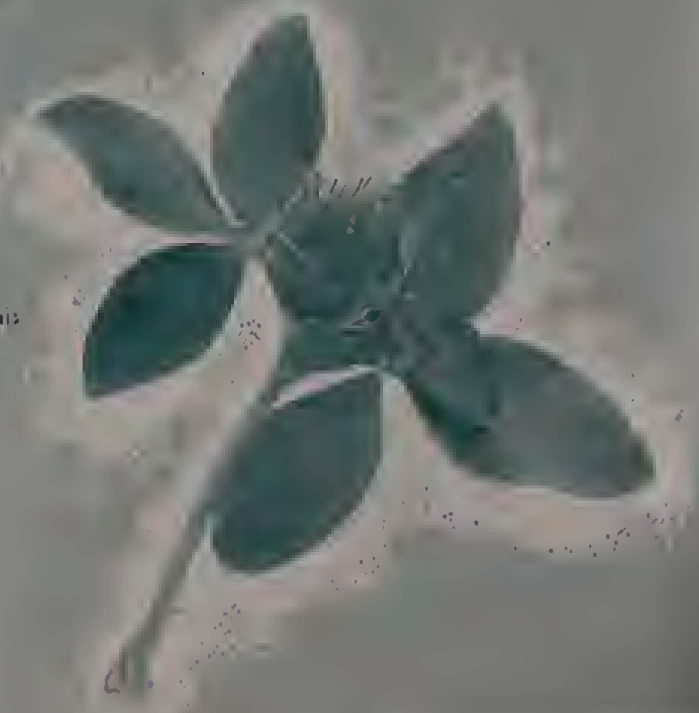


Clover heads infested by larvae of the clover seed midge.



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[1] *Dasyneura leguminicola.*

If there is no rainfall during the first 2 weeks of July, few adults emerge, and the summer generation is scarce. By mid-July most of the adults are dead.

The summer-generation adults lay eggs in the young heads of the seed crop.

Late Summer and Fall

Larvae of the summer generation mature in a month. If the weather is dry, they frequently remain in the heads until the clover is hulled, or, if the crop is left standing, until fall rains occur.

If rainfall is normal, the larvae drop to the ground, spin cocoons, and pupate. The pupae change into adults that emerge during late August, September, and, occasionally, well into October.

Third-generation adults lay eggs in the late clover heads. Most of the larvae mature before killing frosts arrive. Enough progeny of the third generation always survive the winter to produce a new generation in the spring.

CONTROL

Pasturing

Pasturing red clover before starting a seed crop is an effective control method.

Early fall pasturing keeps down the number of volunteer heads in which midges might get established.

Spring pasturing destroys clover heads containing eggs and partly grown larvae, or prevents heads from forming while spring-generation adults are laying eggs.

Remove livestock in late May or in early June. Run a mower over the field if grazing has not been close enough to get all the clover heads.

Cutting

Cut the hay crop and remove it from the field early in June. If rain interferes, cut the crop as soon as possible after the rain and complete the job before the flowers turn brown. Cutting early in June destroys larvae before they mature and drop to the ground to pupate.

To find what stage of development the larvae are in, cut open sample flower heads about June 1. If the larvae are salmon pink, they are nearly mature, and cutting should not be delayed.

Clipping

Clip clover about the middle of May if pasturing is not feasible and no hay crop is desired. Leave the clippings on the ground as mulch. Clover clipped about this time will not produce young

DESCRIPTION OF LIFE STAGES

- **ADULTS.** The adult midge has a delicate structure that gives it a mosquitolike appearance, but it is much smaller than a mosquito. The thorax (forepart of the body) is black and the abdomen (rear part of the body) bright red. The wings are hair-fringed and dusky. The female has a long ovipositor, or egg-laying organ. The male is more slender and fragile than the female, and has a shorter abdomen.
- **EGGS.** The eggs are oval and barely visible. They are pale yellow at first but assume an orange shade just before hatching.
- **LARVAE.** When they hatch, larvae are pale yellow with an internal but visible bright orange spot. As they grow, they change from yellow to creamy white, and become salmon pink shortly before they mature. Full-grown larvae are about one-tenth inch long.
- **COCOONS.** The cocoons are white, silklike, and about one-tenth inch long. They are usually coated with soil.

Larvae of the clover seed midge. Greatly enlarged.

heads until after the spring-generation adults have disappeared. The heads will be far enough advanced by July 1 to be immune from attack by summer-generation adults.

If the fields are clipped earlier than May 15, the clover will grow enough to produce heads by early June, and the heads will be subject to attack by spring-generation adults.

Soiling

Farmers who combine dairying with clover-seed production can cut the clover and feed it green during the spring and early summer. This practice, known as soiling, controls midges if the clover is held back sufficiently to prevent young heads from developing before mid-June.

When clover is cut for dairy cows late in April or early in May, it may be necessary to make a second cutting about June 1.

This leaflet was prepared by the Entomology Research Branch, Agricultural Research Service. It supersedes Farmers' Bulletin 971, The Control of the Clover-Flower Midge.

Washington, D. C. Issued December 1954

U. S. GOVERNMENT PRINTING OFFICE 16—71029-1

For sale by the Superintendent of Documents, Washington 25, D. C.
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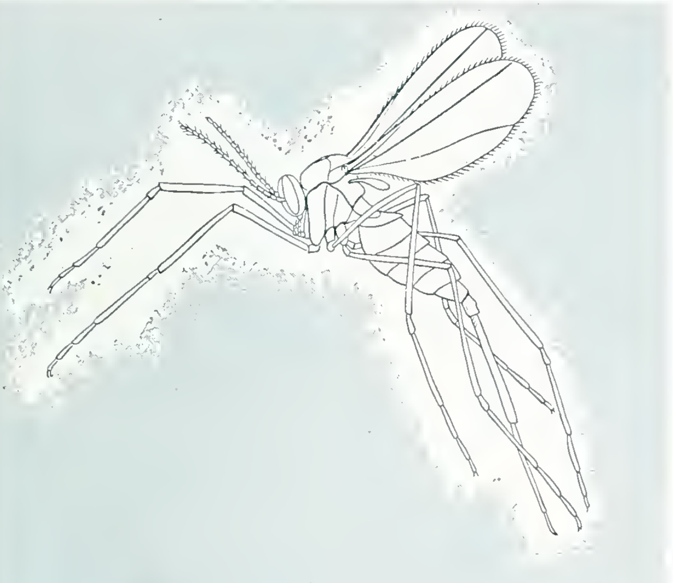

The clover seed midge. Greatly enlarged.